

ABSTRACT

A process for producing iron metal and slag by smelting iron-containing source material, having iron present as oxide and/or in a partially metallised state, in a reactor containing a molten bath comprising or having a slag phase, 5 utilises injection of fuel/reductant and oxygen-containing gas into the slag, by at least one top-submerged lance, to generate heating and reducing conditions in at least one reducing region in the bath. The source material is fed to the reactor, together with additional reductant and with flux, at or adjacent to the at least one reducing region, to subject the source material to smelting reduction which 10 generates combustion gases comprising CO and H₂. The rates of injection of the oxygen-containing gas and fuel/reductant by said at least one lance are controlled to achieve required, sufficient reducing conditions; and, in the reactor above the bath, the combustion gases generated by the smelting are post-combusted. The controlling of step (c) is conducted to result in the injected 15 oxygen-containing gas having an oxygen content of from about 40 volume% to about 100 volume% and sufficient for a degree of combustion in excess of 60 wt% of the fuel/reductant injected by the at least one lance.

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